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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,704	09/30/2003	Tony A. Opheim	42.P16903	4545

7590 04/24/2006

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EXAMINER

ANDUJAR, LEONARDO

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 04/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary

Application No.

10/674,704

Applicant(s)

OPHEIM, TONY A.

Examiner

Leonardo Andújar

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4, 5, 7, 20, 22-24 and 27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 5, 7, 20, 22-24 and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/20/2005 has been entered.

Election/Restrictions

2. Applicant's election without traverse of group I (claims 1-7 and 20-27) in the reply filed on 04/05/2005 is acknowledged.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim 1 recites the limitation "the contact" in line 11. There is insufficient antecedent basis for this limitation in the claim.

6. Claim 20 recites the limitation "the first contact" in lines 10-11. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

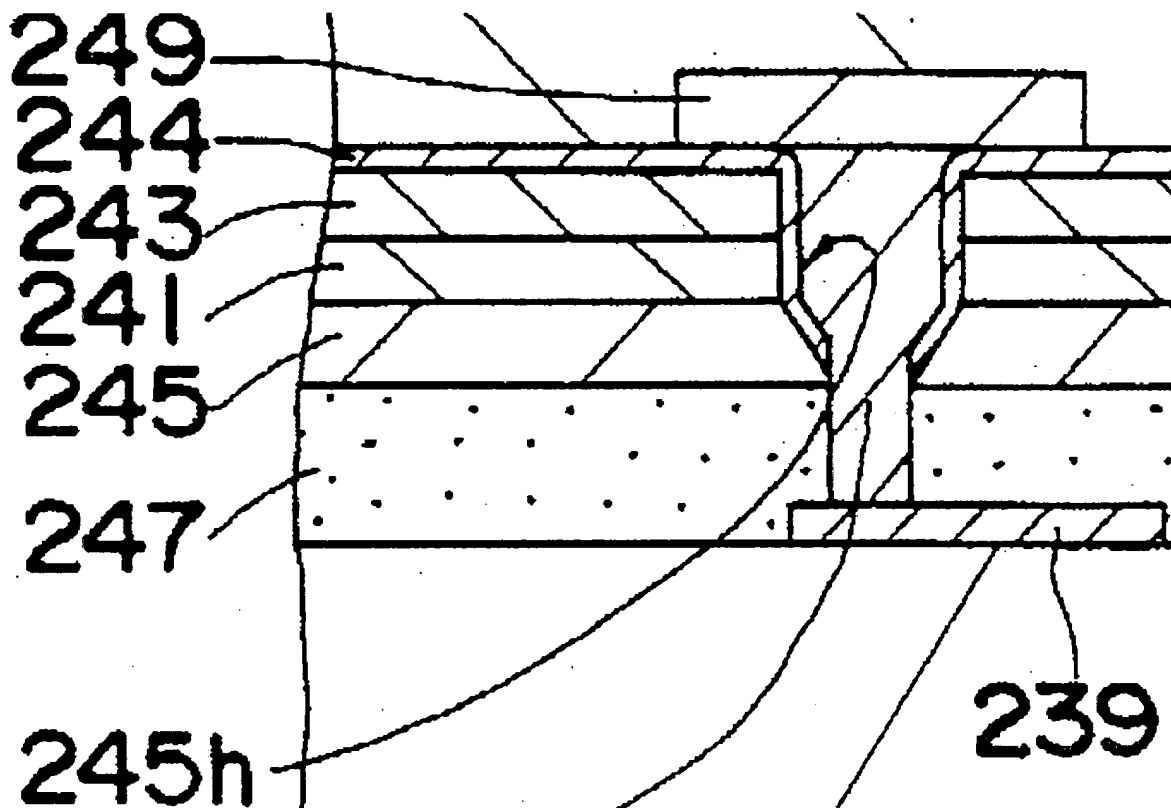
7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 4, 5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsunami (US 5,463,246).

9. Regarding claim 1 (as understood), Matsunami (e.g. figs.20) shows a die comprising: a dielectric layer 241-244 positioned on top of a semiconductor support layer 245; a via passing through the dielectric layer and the semiconductor support layer, wherein a first end of the via is positioned in the dielectric layer and a second end of the via is positioned in the semiconductor support layer. Matsunami shows that a first diameter of the first end is greater than a second diameter of the second end, wherein the second end of the via includes a shaft having a diameter similar to the second diameter. Also, the shaft tapers outward from a center of the via within a semiconductor support layer towards the dielectric layer to form a semi cone shape in the semiconductor support layer. The semi cone forms an increased via contact area at the first end for coupling the via to a contact 249, which is positioned on top of the dielectric layer.



10. Regarding claim 4, Matsunami shows that the via continues to taper outwards from the second end into the first end to form a semi cone shape in the dielectric layer.

11. Regarding claim 5, Matsunami teaches that a diameter of the first end is similar to the diameter of the semi cone shape, the first end to form a cylinder shape in the dielectric layer.

12. Regarding claim 7, Matsunami teaches that via includes a metal filled via 248.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

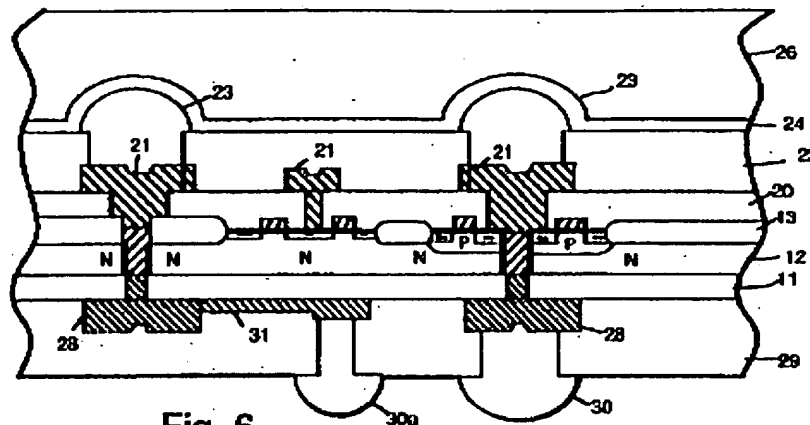
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

Art Unit: 2826

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 20, 22, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsunami (US 5,463,246) in view of Finnila (US 5,426,072).

15. Regarding claims 20 (as understood) and 24, Matsunami (e.g. figs.20) shows system comprising a printed circuit board 270 (col. 1/lls. 41-42; a processor coupled to the PCB having a dielectric layer 241-244 positioned on top of a semiconductor support layer 245; a via passing through the dielectric layer and the semiconductor support layer, wherein a first end of the via is positioned in the dielectric layer and a second end of the via is positioned in the semiconductor support layer. Matsunami shows that a first diameter of the first end is greater than a second diameter of the second end, wherein the second end of the via includes a shaft having a diameter similar to the second diameter. Also, the shaft tapers outward from a center of the via within a semiconductor support layer towards the dielectric layer to form a semi cone shape in the semiconductor support layer. The semi cone forms an increased via contact area at the first end for coupling the via to a first contact 249, which is positioned on top of the dielectric layer. Matsunami does not show that a second contact (e.g. the external pin portion) is disposed on the semiconductor support layer. However, Finnila teaches that a second contact 28/31 disposed on a semiconductor support layer 11/12.



It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a second contact on the support layer disclosed by Matsunami in accordance with Finnila's invention to internally redistribute the external contacts in order to provide an enhanced design flexibility which effectively fulfill the requirements of complex integrated circuit because they are not required to be located directly over the vertical feedthroughs.

16. Regarding claim 22, Matsunami shows that the first end continues to taper outwards from the second end into the first end to form a semi cone shape in the dielectric layer.

17. Regarding claim 23, Matsunami teaches that a diameter of the first end of the via though the dielectric layer is similar to the diameter of the semi cone shape, the first end to form a cylinder shape in the dielectric layer.

18. Regarding claim 27, Matsunami teaches that the first diameter is approximately twice the second diameter.

Art Unit: 2826

Response to Arguments

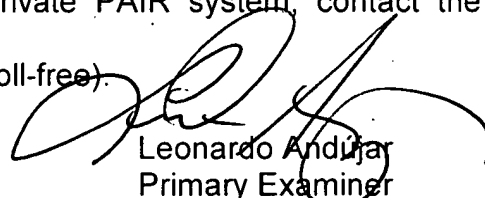
19. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonardo Andújar whose telephone number is 571-272-1912. The examiner can normally be reached on Mon through Thu from 9:00 AM to 7:30 PM EST.

21. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

22. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Leonardo Andújar
Primary Examiner
Art Unit 2826

04/10/2006